

Crane or Derrick Suspended Personnel Platforms



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Abstract <p>Using cranes or derricks to hoist personnel poses a significant risk to employees being lifted. To help prevent employee injury or death, the Occupational Safety and Health Administration (OSHA) regulation, Title 29 Code of Federal Regulations 1926.550 limits the use of personnel hoisting in the construction industry and prescribes the proper safety measures for these operations. Personnel platforms that are suspended from the load line and used in construction are covered by 29 CFR 1926.550(g). in addition, there is no specific provision for suspended personnel platforms in Part 1910. The governing provision, therefore, is general provision 1910.180(h)(3)(v), which prohibits traveling hoisting, lowering, swinging, or traveling while anyone is on the load or hook. OSHA has determined, however, that when the use of a conventional means of access to any elevated work site would be impossible or more hazardous, a violation of 1910.150(h)(3)(v) will be treated as "deminimas" if the employer has complied with provisions set forth in 1926.550(g)(3), (4), (5), (6), (7), and (8). The OSHA rule for hoisting personnel is written in performance-oriented language that allows employers flexibility in deciding how to provide the best protection for their employees against the hazards associated with hoisting operations and how to bring their work sites into compliance with the requirements of the standard.</p>		
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**U.S. Department of Labor
Robert B. Reich, Secretary**

**Occupational Safety
and Health Administration**

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Introduction

Using cranes or derricks to hoist personnel poses a significant risk to employees being lifted. To help prevent employee injury or death, the Occupational Safety and Health Administration (OSHA) regulation, *Title 29 Code of Federal Regulations 1926.550* limits the use of personnel hoisting in the construction industry and prescribes the proper safety measures for these operations.

Personnel platforms that are suspended from the load line and used in construction are covered by 29 CFR 1926.550(g). In addition, there is no specific provision for suspended personnel platforms in Part 1910. The governing provision, therefore, is general provision 1910.180(h)(3)(v), which prohibits traveling hoisting, lowering, swinging, or traveling while anyone is on the load or hook. OSHA has determined, however, that when the use of a conventional means of access to any elevated work site would be impossible or more hazardous, a violation of 1910.150(h)(3)(v) will be treated as "de minimas" if the employer has complied with provisions set forth in 1926.550(g)(3), (4), (5), (6), (7), and (8).

The OSHA rule for hoisting personnel is written in performance-oriented language that allows employers flexibility in deciding how to provide the best protection for their employees against the hazards associated with hoisting operations and how to bring their work sites into compliance with the requirements of the standard.

This booklet discusses OSHA's requirements for hoisting personnel by crane or derrick in the construction industry, prescribes the measures employers must take to bring their work operations into compliance, and describes safe work practices for employees; but it is not a substitute for the actual OSHA rule.

Crane and Derrick Operations

The OSHA rule prohibits hoisting personnel by crane or derrick except when no safe alternative is possible. Based on the review of the record, OSHA determined that hoisting with crane- or derrick-suspended personnel platforms constitutes a significant hazard to hoisted employees and must not be permitted unless conventional means of transporting employees are not feasible or unless they present greater hazards. OSHA determined that compliance with the provisions of this standard will provide the best available protection for personnel being hoisted by these platforms in those limited situations where such hoisting is necessary.

Where conventional means (e.g., scaffolds, ladders) of access would not be considered safe, personnel hoisting operations, which comply with the terms of this standard, would be authorized. OSHA stresses that employee safety--not practicality or convenience--must be the basis for the employer's choice of method.

Cranes and derricks used to hoist personnel must be placed on a firm foundation and the crane or derrick must be uniformly level within 1 percent of level grade.

The crane operator must always be at the controls when the crane engine is running and the personnel platform is occupied. The crane operator also must have full control over the movement of the personnel platform. Any movement of the personnel platform must be performed slowly and cautiously without any sudden jerking of the crane, derrick, or the platform. Wire rope used for personnel lifting must have a minimum safety factor of seven. (This means it must be capable of supporting seven times the maximum intended load.) Rotation resistant rope must have a minimum safety factor of ten.

When the occupied personnel platform is in a stationary position, all brakes and locking devices on the crane or derrick must be set.

The combined weight of the loaded personnel platform and its rigging must not exceed 50 percent of the rated capacity of the crane or derrick for the radius and configuration of the crane or derrick.

Instruments and Components

Cranes and derricks with variable angle booms must have a boom angle indicator that is visible to the operator. Cranes with telescoping

booms must be equipped with a device to clearly indicate the boom's extended length, or an accurate determination of the load radius to be used during the lift must be made prior to hoisting personnel. Cranes and derricks also must be equipped with (1) an anti-two-blocking device that prevents contact between the load block and overhaul bail and the boom tip, or (2) a two-block damage-prevention feature that deactivates the hoisting, action before damage occurs.

Personnel Platforms

Platforms used for lifting personnel must be designed with a minimum safety factor of five and designed by a qualified engineer or a qualified person competent in structural design. The suspension system must be designed minimize tipping due to personnel movement on the platform.

Each personnel platform must be provided with a standard guardrail system that is enclosed from the toeboard to the mid-rail to keep tools, materials, and equipment from falling on employees below. The platform also must have an inside grab rail, adequate headroom for employees, and a plate or other permanent marking that clearly indicates the platform's weight and rated load capacity or maximum Intended load. When personnel are exposed to falling objects, overhead protection on the platform and the use of hard hats

are required.

An access gate, if provided, must not swing outward during hoisting and must have a restraining device to prevent accidental opening.

All rough edges on the platform must be ground smooth to prevent injuries to employees.

All welding on the personnel platform and its components must be performed by a qualified welder who is familiar with weld grades, types, and materials specified the platform design.

Loading

The personnel platform must not be loaded in excess of its rated load capacity or its minimum intended toad. Only personnel instructed in the requirements of the standard and the task to be performed----along with their tools, equipment, and materials needed for the job----are allowed on the platform. Materials and tools must be secured and evenly distributed to balance the load while the platform is in motion.

Rigging

When a wire rope bridle is used to connect the platform to the load line, the bridle legs must be connected to a master link or shackle so that the load is evenly positioned among the bridle legs. Bridles and

and associated rigging for attaching the personnel platform to the hoist line must not be used for any other purpose.

Attachment assemblies such as hooks must be closed and locked to eliminate the hook throat opening; an alloy anchor-type shackle with a bolt, nut, and retaining pin may be used as an alternative. “Mousing” (wrapping wire around a hook to cover the hook opening) is not permitted.

Inspecting and Testing

A trial lift of the unoccupied personnel platform must be made before any employees are allowed to be hoisted. During the lift, the personnel platform must be loaded at least to its anticipated lift weight. The lift must start at ground level or at the location where employees will enter the platform and proceed to each location where the personnel platform is to be hoisted and positioned. The trial lift must be performed immediately prior to placing personnel on the platform.

The crane or derrick operator must check all systems, controls, and safety devices to ensure the following:

- They are functioning properly.
- There are no interferences.
- All boom or hoisting configurations necessary to reach work locations will allow the operator to remain within the 50-percent load limit of the hoist’s rated capacity.

If a crane or derrick is moved to a new location or returned to a previously used one, the trial lift must be repeated before hoisting personnel.

After the trial lift, the personnel platform must be hoisted a few inches and inspected to ensure that it remains secured and is properly balanced.

Before employees are hoisted, a check must be made to ensure the following:

- Hoist ropes are free of kinks.**
- Multiple part lines are not twisted around each other.**
- The primary attachment is centered over the platform.**
- There is no slack in the wire rope.**
- All ropes are properly seated on drums and in sheaves.**

Immediately after the trial lift, a thorough visual inspection of the crane or derrick, the personnel platform, and the crane or derrick base support or ground must be conducted by a competent person to determine if the lift test exposed any defects or produced any adverse effects on any component or structure. Any defects found during inspections must be corrected before hoisting personnel.

When initially brought to the job site and after any repair or modification, and prior to hoisting personnel, the platform and

rigging must be proof tested to 125 percent of the platform's rated capacity. This is achieved by holding the loaded platform--with the load evenly distributed--in a suspended position for 5 minutes. Then a competent person must inspect the platform and rigging for defects. If any problems are detected, they must be corrected and another proof test must be conducted. Personnel hoisting must not be conducted until the proof testing requirements are satisfied.

Pre-Lift Meeting

The employer must hold a meeting with all employees involved in personnel hoisting operations (crane or derrick operator, signal person's), employees to be lifted, and the person responsible for the hoisting operation) to review the OSHA requirements and the procedures to be followed before any lift operations are performed.

This meeting must be held before the trial lift at each new work site and must be repeated for any employees newly assigned to the operation.

Safe Work Practices

Employees, too, can contribute to safe personnel hoisting operations and help to reduce the number of accidents and injuries associated with personnel hoisting operations. Employees must

follow these safe work practices:

- **Use tag lines unless their use creates an unsafe condition.**
- **Keep all body parts inside the platform during raising, lowering, and positioning.**
- **Make sure a platform is secured to the structure where work is to be performed before entering or exiting it, unless such securing would create an unsafe condition.**
- **Wear a body belt or body harness system with a lanyard. The lanyard must be attached to the lower load block or overhaul ball or to a structural member within the personnel platform. If the hoisting operation is performed over water, the requirements 29 CFR 1920.106—*Working over or near water*—must apply.**
- **Stay in view of, or in direct communication with, the operator or signal person.**

Crane and derrick operators must follow these safe work practices:

- **Never leave crane or derrick controls when the engine is running or when the platform is occupied.**
- **Stop all hoisting operations if there are indications of any dangerous weather conditions or other impending**

- Do not make any lifts on another load line of a crane or derrick that is being used to hoist personnel.

Movement of Cranes

Personnel hoisting is prohibited while the crane is traveling except when the employer demonstrates that this is the least hazardous way to accomplish the task or when portal, tower, or locomotive cranes are used.

When cranes are moving while hoisting personnel, the following rules apply:

- Travel must be restricted to affixed track or runway.
- Travel also must be limited to the radius of the boom during the lift.
- The booth must be parallel to the direction of travel.
- There must be a complete trial run before employees occupy the platform.
- If the crane has rubber tires, the condition and air pressure of the tires must be checked and the chart capacity for lifts must be applied to remain under the 50-percent limit of the hoist's rated capacity. Outriggers may be partially retracted as necessary for travel.

Compliance with a common-sense requirements of the OSHA standard and the determination that no other safe method is available should greatly reduce or eliminate the injuries and

accidents that occur too frequently during personnel hoisting operations.

Related Publications

Single, free copies of the following publications can be obtained from the OSHA Publications Office, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-3101, Washington, DC 20210, or from the nearest OSHA Regional Office listed in this booklet. Send a self-addressed label with your request.

All About OSHA – OSHA 2056

Consultation Services for the Employer – OSHA 3047

How to Prepare for Workplace Emergencies – OSHA 3088

OSHA: Employee Workplace Rights – OSHA 3021

OSHA Inspections – OSHA 2098

Personal Protective Equipment – OSHA 3077

The following publications are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 783-3238. Include GPO Order No. and make checks payable to Superintendent of Documents.

Code of Federal Regulations (CFR):

Title 29 CFR Parts 1901.1 to 1910.441

General Industry (OSHA)

Order No. 869-011-00109-2; Cost \$24.00.

**Title 29 CFR Parts 1901.1000 to end General
Industry (OSHA)**

Order No. 869-001-00112-2; Cost \$14.00.

Title 29 CFR Part 1926 Construction (OSHA)

Order No. 869-001-00112-2; Cost \$12.00.

Construction Industry Digest – OSHA 2202

Order No. 029-016-00128-0; Cost \$1.75

Job Hazard Analysis – OSHA 3071

Order No. 029-016-00142-5; Cost \$1.00

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